THE SCIENTIFIC DILUTION OF MILK FOR INFANTS.

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THE SCIENTIFIC DILUTION OF MILK FOR INFANTS.

A glance at recent files of medical journals will shew any one that though we have made distinct advances we have not yet arrived at perfection in the matter of infant-feeding. Recognising the fact that different schools of thought exist, it is only proposed in this pamphlet to allude to some important points which are not only uncontroverted and of clinical interest, but for which also well-authenticated chapter and verse can be given in the way of proof.

Biedert, in 1884, shewed that all milk contains two varieties of proteid. In 1885, Sebelien isolated these two proteids—an insoluble casein and a soluble lactalbumin. He also shewed that whereas mother's milk contained 1.4% of lactalbumin, cow's milk contained only 0.75%, figures with which Dr. G. F. Still agrees.

The infant's stomach possesses very little, if any, power of converting casein into soluble albumin until the beginning of the second year of life.

When cow's milk is diluted with one part of water the

soluble lactalbumin falls naturally to 0.375%, and when it is further diluted it falls proportionately still lower. The diagram below shews this in graphic form.

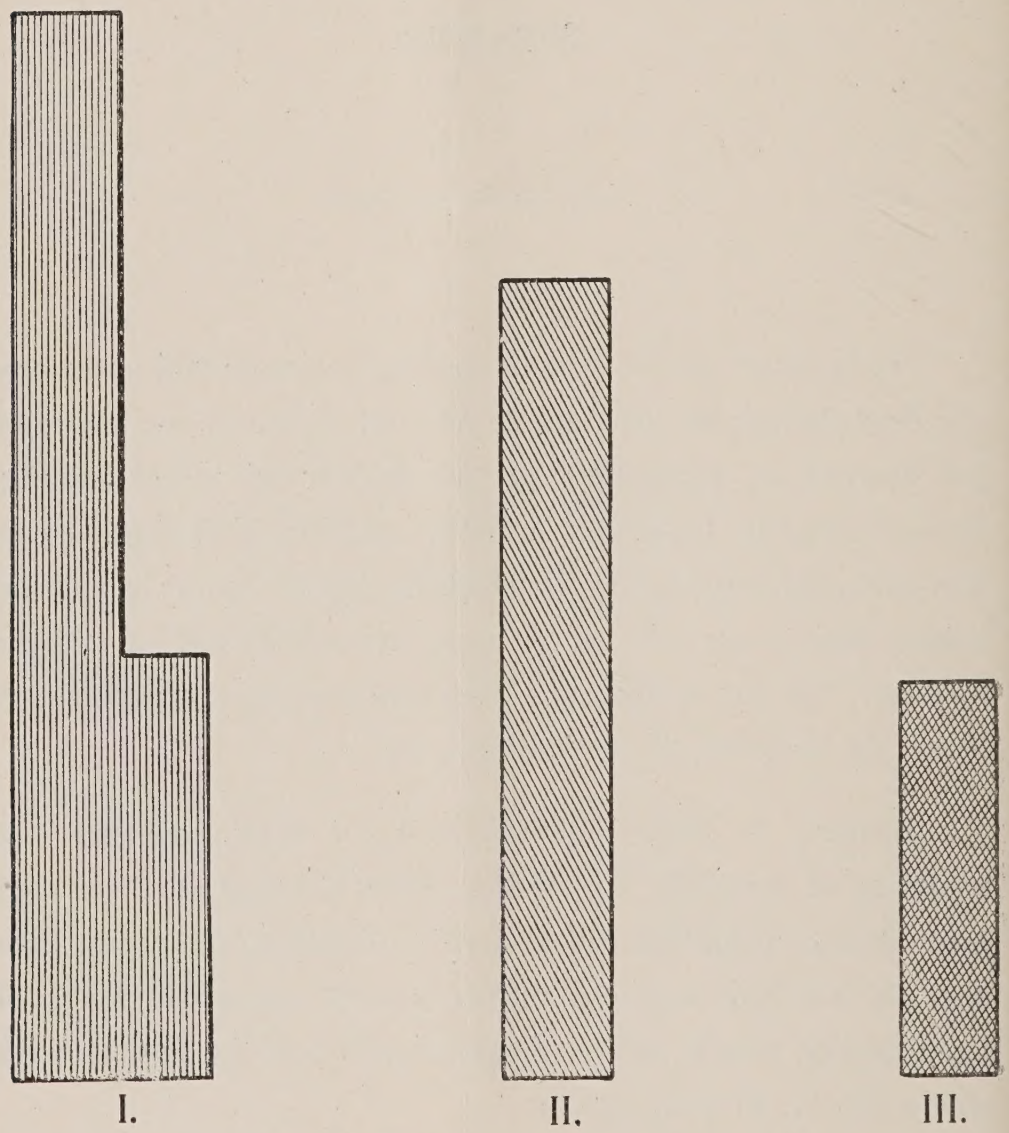

Diagram showing :-

I. Lactalbumin in Human Milk.

II. Lactalbumin in Cows' Milk.

III. Lactalbumin in Cows' Milk diluted with an equal part of water.

To overcome this difficulty some physicians made use of whey, but soon abandoned it because of the toxæmia it produced. (See article by Dr. Leonard Findlay, *Glasgow Medical Journal*, Oct., 1910, p. 250).

Verily, the physician was now on the horns of a dilemma —he had to dilute cow's milk because of its too high percentage of casein, but when he did this he reduced the soluble albumin to a ridiculously inadequate amount.

With the discovery of lactalbumin and its preparation in a conveniently usable form, the whole *impasse* was overcome. The cow's milk can now be diluted to any desired extent with water and the addition of a pure, soluble, natural milk-albumin, known as Albulactin, makes the mixture the exact equivalent in this respect of rich human milk.

Experiments made by the Analytical Staff of the *British Medical Journal* (May 21st, 1910) have shewn that :

(1) Albulactin is a fine, dry powder, readily soluble in water and forming a slightly cloudy solution.

(2) The addition of acid to this solution caused the precipitation of the albumin in a finely-divided form which did not form clots.

(3) A modified milk, prepared by mixing cow's milk, albulactin and water in such proportions that the casein and albulactin were in approximately equal amounts, formed much less curd when acidified than diluted cow's milk containing the same proportion of total protein.

(4) Albulactin contains 12.71% of nitrogen—representing 80.1% of protein.

Amongst well-known Text Books in which Albulactin is mentioned with approval are the following:

Food and the Principles of Dietetics, by Dr. Robert Hutchison. 3rd ed., p. 450.

Diseases of Children, by Sir J. F. Goodhart and Dr. G. F. Still. p. 81.

The Difficulties and Emergencies of Obstetric Practice, by Dr. Comyns Berkeley and Dr. Victor Bonney. p. 756.

Index of Treatment, by various writers.

Quinquennial of Medicine and Surgery.

Many references could also be given to special articles in the Medical Journals.

WHAT ALBULACTIN DOES.

1. It makes cow's milk equal in food value to human milk by raising the percentage of milk-albumin.

2. It ensures the formation of finely-divided feathery flakes in the infant's stomach instead of the large and tough curds which are either vomited back or pass onwards to decompose and cause toxæmia.

3. It has a markedly beneficial effect on flatulence, vomiting, colic, diarrhœa and marasmus.

4. It is invariably well-borne by the most delicate stomach.

5. It brings about a steady and noticeable increase in weight.

6. It is not merely a curative, but also and most distinctly a **preventive** of such conditions as gastro-enteritis, zymotic enteritis, marasmus and toxæmia.

NOTA BENE.

The last point mentioned needs emphasising most strongly. In the past, many physicians have regarded Albulactin only as a last remedy in desperate cases. Whilst it has unquestionably saved many infant lives when the condition induced by vomiting, diarrhœa, prematurity and so forth had become truly deplorable—cases where the infant has been reduced to a peevish, pale, sharp-featured, wizened, wasted and almost stuporose skeleton—it must be borne in mind at all times that Albulactin, if given from the earliest commencement of artificial feeding, can and will **prevent** the onset of these distressing and enfeebling conditions.

Infants instinctively know what suits them and what does not, and quite a number of infants will refuse to take cow's milk after one or two painful experiences with it. But when these experiences have not been felt or do not recur their appetite and relish for cow's milk is readily established or regained.

One other quality of Albulactin which is worthy of special notice is the property it possesses of protecting unstable colloids, such as milk casein, from coagulation. This has been demonstrated by the use of the ultra-miscroscope by Zsigmondy (*Archives of Pediatrics*, January, 1910).

In plain language the use of Albulactin improves the

digestibility of casein by preventing its coagulation. This fact is favourably commented upon by Dr. E. Mather Sill, Lecturer on Diseases of Children at the New York Polyclinic Medical School and Hospital, in a paper published in the New York Medical Journal. Dr. Sill's clinical results quoted in this Journal are backed up by tables shewing the steady increase in weight obtained in a large number of cases where cow's milk modified by Albulactin was prescribed.

Still another matter remains to be noted, for we understand that it has occasioned doubt in the minds of some physicians, and that is the fear that mothers cannot be trusted to mix the Albulactin properly. We can assure our readers that we have made special inquiries on this particular point from Medical Officers of Infant Welfare Centres and others who have a large element of the lower working-classes in their practices, and we are assured on all hands that even a densely ignorant woman can do this after being shewn only once.

In conclusion : Clinical cases could be quoted *ad nauseum*, photographs, weight records, diarrhœa charts, etc., could be produced in large numbers, references to medical literature could be given sufficient to satisfy the most incredulous. But the true test of any preparation for any physician who wants to see the results for himself is obviously the clinical one.

Try this both as a preventive and as a curative, but more particularly as a preventive.